SUBJECT INDEX

Air Traffic Control

Optimal Scheduling with Maximum Position Shift (MPS) Constraints: A Runway Scheduling Application. *Dr Dionyssios A. Trivizas* 250

Modified Automatic Dependent Surveillance (M-ADS) for North Sea Helicopters. *Captain K. Lande* 304

Assessing the Benefit of Innovations in ATC. *S. Ratcliffe*. 312

Animal and Human Navigation

The Roles of Innate Information, Learning Rules and Plasticity in Migratory Bird Orientation. *Kenneth P. Able and Mary A. Able* 1

Sea Turtle Navigation and the Detection of Geomagnetic Field Features. *Kenneth J. Lohmann and Catherine M. F. Lohmann* 10

Cooperation Between Dead Reckoning (Path Integration) and External Position Cues. *Arianne S. Etienne, Roland Maurer, Joëlle Berlie, Valérie Derivaz, Joséphine Georgakopoulos, Andrea Griffin and Tiffany Rowe* 23

Magnetic Discrimination Learning in Rainbow Trout (*Oncorhynchus mykiss*). *Cordula V. Haugh and Michael M. Walker* 35

Collision Avoidance

Rules and Regulations in Maritime Collision Avoidance: New Directions for Bridge Team Training. *Donald H. Taylor* 67

Fast Craft and the Colregs (Forum). *Hanno Weber* 132

High Speed Craft and the Colregs – A Proposal (Forum). *Dick Clements* 430

Fast Craft and the Colregs (Forum). *A. T. C. Millns* 437

Aircraft Collision Risks at the Start of the 21st Century (Forum). *David Cockburn* . 439

Command and Control

Control Strategies for Unmanned Underwater Vehicles. *Paul J. Craven, Robert Sutton and Roland S. Burns* 79

Effect of Path Prediction on Navigational Performance. *Leo van Breda and Peter O. Passenier* 216

Realistic Autofarming, Closed-Loop Tractor Control over Irregular Paths Using Kinematic GPS. *Thomas Bell, Dr Michael O'Connor, Dr V. K. Jones, Andrew Rekow, Gabriel Elkaim and Dr Bradford Parkinson* 327

Communications

Identification of Ships and Transfer of Information Through Transponders. *Captain Dr Antonio J. Poleo Mora, Capt Dr Enrique Garcia Melón and Capt José Diaz Pérez* . . 345

Coordinates and Geodesy

Middle Latitude Sailing Revisited (Forum). *Roy Williams* 135

Errors and Accuracy Requirements

European Offshore Oil Exploration and Production Navigation and Positioning Requirements. *Paul Edge* 194

History

The Emergence of Nautical Astronomy in Portugal in the XVth Century. *W. G. L. Randles*. 46

Navigational Stimuli in the Development of Mathematical Science. *P. A. H. Seymour* 106

SUBJECT INDEX

Air Traffic Control

Optimal Scheduling with Maximum Position Shift (MPS) Constraints: A Runway Scheduling Application. *Dr Dionyssios A. Trivizas* 250

Modified Automatic Dependent Surveillance (M-ADS) for North Sea Helicopters. *Captain K. Lande* 304

Assessing the Benefit of Innovations in ATC. *S. Ratcliffe*. 312

Animal and Human Navigation

The Roles of Innate Information, Learning Rules and Plasticity in Migratory Bird Orientation. *Kenneth P. Able and Mary A. Able* 1

Sea Turtle Navigation and the Detection of Geomagnetic Field Features. *Kenneth J. Lohmann and Catherine M. F. Lohmann* 10

Cooperation Between Dead Reckoning (Path Integration) and External Position Cues. *Arianne S. Etienne, Roland Maurer, Joëlle Berlie, Valérie Derivaz, Joséphine Georgakopoulos, Andrea Griffin and Tiffany Rowe* 23

Magnetic Discrimination Learning in Rainbow Trout (*Oncorhynchus mykiss*). *Cordula V. Haugh and Michael M. Walker* 35

Collision Avoidance

Rules and Regulations in Maritime Collision Avoidance: New Directions for Bridge Team Training. *Donald H. Taylor* 67

Fast Craft and the Colregs (Forum). *Hanno Weber* 132

High Speed Craft and the Colregs – A Proposal (Forum). *Dick Clements* 430

Fast Craft and the Colregs (Forum). *A. T. C. Millns* 437

Aircraft Collision Risks at the Start of the 21st Century (Forum). *David Cockburn* . 439

Command and Control

Control Strategies for Unmanned Underwater Vehicles. *Paul J. Craven, Robert Sutton and Roland S. Burns* 79

Effect of Path Prediction on Navigational Performance. *Leo van Breda and Peter O. Passenier* 216

Realistic Autofarming, Closed-Loop Tractor Control over Irregular Paths Using Kinematic GPS. *Thomas Bell, Dr Michael O'Connor, Dr V. K. Jones, Andrew Rekow, Gabriel Elkaim and Dr Bradford Parkinson* 327

Communications

Identification of Ships and Transfer of Information Through Transponders. *Captain Dr Antonio J. Poleo Mora, Capt Dr Enrique Garcia Melón and Capt José Diaz Pérez* . . 345

Coordinates and Geodesy

Middle Latitude Sailing Revisited (Forum). *Roy Williams* 135

Errors and Accuracy Requirements

European Offshore Oil Exploration and Production Navigation and Positioning Requirements. *Paul Edge* 194

History

The Emergence of Nautical Astronomy in Portugal in the XVth Century. *W. G. L. Randles*. 46

Navigational Stimuli in the Development of Mathematical Science. *P. A. H. Seymour* 106

History of Air Maps and Charts. *Philip Steele* 203
The Development of the Gyrocompass – Inventors as Navigators. *J. Broelmann* . . 267

Hydrography, Meteorology and Oceanography
Generation of UK Tidal Stream Atlases from Regularly Gridded Hydrodynamic Modelled Data. *Colin Bell and Lisa Carlin* 73

Integrated Systems
Synchronised Low-Frequency Augmentation of GPS. *William F. Roland* 294

Land Navigation and Vehicle Location
Vehicle Tracking and Security. *A. G. Scorer* 170
Experiences with the DGPS-based Tramway Location System in Mannheim. *Dietmar Vogel* 336
Developing a Location Database for the UK Radio Data System – Traffic Messaging Channel Service. *J. D. A. Stokes, I. D. James and L. Holliday*. 353
Urban Fleet Monitoring with GPS and GLONASS. *Dr M. Tsakiri, M. Stewart, T. Forward, D. Sandison and J. Walker* 382

Maps and Charts
The Status and Future of the Electronic Chart. *A. P. Norris* 321

Navigation Policy and Economics
Possible Russian Contribution to the ERNP. *Vladimir Denisov and Peter Kent* . . 145
Aircraft Fuel Savings in Jet Streams by Maximising Features of Flight Mechanics and Navigation. *Ronald C. C. Houghton* 360

Obituaries
Air Vice Marshal Wilfrid Oulton 277

Radar
Future of Radar Enhancers (Forum). *Richard M. Trim* 133
Civil Marine Radar – A Review and a Way Ahead. *P. D. L. Williams* 394

Radio Aids
Loran-C in a European Navigation Perspective. *Börje Forssell* 243

Reviews (Reviewer's name in parentheses)
Radar Technology Encyclopedia. Edited by D. K. Barton and S. A. Leonov. (*J. N. Briggs*) 141
Collisions and Their Causes. By Richard A. Cahill (*John Kemp*) 142
The Quest for Longitude. Edited by William J. H. Andrewes (*N. A. Doe*) 274
Man Is Not Lost. By Group Captain F. C. ('Dickie') Richardson (*W. F. Blanchard*) 276
Geometry of Navigation. By Roy Williams (*John Kemp*) 445
Vehicle Location and Navigation Systems. By Yilin Zhao (*A. G. Scorer*) 446
Positioning Systems in Intelligent Transportation Systems (ITS). By Chris Drane and Chris Rizos (*A. G. Scorer*) 445

Risk Analysis
Operational Benefits and Risk Reduction of Marine Accidents. *L. H. J. Goosens and C. C. Glansdorp* 368

Safety, Search and Rescue
VHF Direction Finding: An Effective System for the Location of Ships in Distress. *Capt Dr Antonio Bermejo Díaz* 229

Satellite Navigaton Systems
Wide Area and Local Area Augmentations: Design Tools and Error Modelling. *V. Ashkenazi, W. Chen, C. J. Hill and T. Moore* 58

Application of Kalman Filter and Mean Field Annealing Algorithms in GPS-Based Attitude Determination. *Jyh-Ching Juang and Guo-Shing Huang* 117
Interference to GPS (Forum). *Walter Blanchard* 132
The Status, Development and Future Role of Radiobeacon Differential GNSS. *N. Ward* 152
Assessing the Navigation Data Input to Aircraft Flight Management Systems. *P. D. Nisner and R. Johannessen* 159
Processing Models for Very High Accuracy GPS Positioning. *J. B. Barnes and P. A. Cross* 180
Technology, Implementation and Policy Issues for the Modernisation of GPS and its Role in GNSS. *Keith D. McDonald* 281

Vessel Traffic Services

A Study on the Application of Pulse Doppler Radar in VTS. *Zhang Xinggu* . . . 237
Vessel Traffic Services (VTS) – Are We Ready for the New Millennium? *Captain Terry Hughes* 404

Visual Aids to Navigation

Traditional Aids to Navigation: The Next 25 Years (Forum). *C. Colchester* . . . 134
The Efficiency of the Greek Lighthouse Network. *Julia Engelson, Mary Lekakou and Ernest Tzannatos* 421

AUTHOR INDEX

Able, K. P. and Able, M. A. The Roles of Innate Information, Learning Rules and Plasticity in Migratory Bird Orientation 1

Ashkenazi, V., Chen, W., Hill, C. J. and Moore, T. Wide Area and Local Area Augmentations: Design Tools and Error Modelling 58

Barnes, J. B. and Cross, P. A. Processing Models for Very High Accuracy GPS Positioning 180

Bell, C. and Carlin, L. Generation of UK Tidal Stream Atlases from Regularly Gridded Hydrodynamic Modelled Data 73

Bell, T., O'Connor, M., Jones, V. K., Rekow, A., Elkaim, G. and Parkinson, B. Realistic Autofarming, Closed-Loop Tractor Control over Irregular Paths using Kinematic GPS 327

Bermejo Diaz, A. VHF Direction Finding: An Effective System for the Location of Ships in Distress 229

Blanchard, W. F. Interference to GPS (Forum) 132

Broelmann, J. The Development of the Gyrocompass – Inventors as Navigators . . . 267

Charnley, J. C. Air Vice Marshal Wilfrid Oulton (Obit) 277

Clements, R. High Speed Craft and the Colregs – A Proposal (Forum) 430

Cockburn, D. Aircraft Collision Risks at the Start of the 21st Century (Forum) . . 439

Colchester, C. Traditional Aids to Navigation: The Next 25 Years (Forum) 134

Craven, P. J., Sutton, R. and Burns, R. S. Control Strategies for Unmanned Underwater Vehicles 79

Denisov, V. and Kent, P. Possible Russian Contribution to the ERNP 145

Edge, P. European Offshore Oil Exploration and Production Navigation and Positioning Requirements 194

Engelson, J., Lekakou, M. and Tzannatos, E. The Efficiency of the Greek Lighthouse Network 421

Etienne, A. S., Maurer, R., Berlie, J., Derivaz, V., Georgakopoulos, J., Griffin, A. and Rowe, T. Cooperation Between Dead Reckoning (Path Integration) and External Position Cues 23

Forssell, B. Loran-C in a European Navigation Perspective 243

Goosens, L. H. J. and Glansdorp, C. C. Operational Benefits and Risk Reduction of Marine Accidents 368

Haugh, C. V. and Walker, M. M. Magnetic Discrimination Learning in Rainbow Trout (*Oncorhynchus mykiss*) 35

Houghton, C. C. Aircraft Fuel Savings in Jet Streams by Maximizing Features of Flight Mechanics and Navigation 360

Hughes, T. Vessel Traffic Services (VTS) – Are We Ready for the New Millennium? . 404

Jyh-Ching Juang and Guo-Shing Huang. Application of Kalman Filter and Mean Field Annealing Algorithms in GPS-Based Attitude Determination 117

Lande, K. Modified Automatic Dependent Surveillance (M-ADS) for North Sea Helicopters 304

Lohmann, K. J. and Lohmann, C. M. F. Sea Turtle Navigation and the Detection of Geomagnetic Field Features 10

McDonald, K. D. Technology, Implementation and Policy Issues for the Modernisation of GPS and its Role in GNSS 281

Millns, A. T. C. Fast Craft and the Colregs (Forum) 437

Nisner, P. D. and Johannessen, R. Assessing the Navigation Data Input to Aircraft Flight Management Systems 159

Norris, A. P. The Status and Future of the Electronic Chart 321

Poleo Mora, A. J., Melón, E. G. and Pérez, J. D. Identification of Ships and Transfer of Information Through Transponders 345

Randles, W. G. L. The Emergence of Nautical Astronomy in Portugal in the XVth Century 46

Ratcliffe, S. Assessing the Benefit of Innovations in ATC 312

Roland, W. F. Synchronised Low-Frequency Augmentation of GPS 294

Scorer, A. G. Vehicle Tracking and Security 170

Seymour, P. A. H. Navigational Stimuli in the Development of Mathematical Science . 106
Steele, P. History of Air Maps and Charts 203
Stokes, J. D. A., James, I. D. and Holliday, L. Developing a Location Database for the UK Radio Data System – Traffic Messaging Channel Service 353
Taylor, D. H. Rules and Regulations in Maritime Collision Avoidance: New Directions for Bridge Team Training 67
Trim, R. M. Future of Radar Enhancers (Forum) 133
Trivizas, D. A. Optimal Scheduling with Maximum Position Shift (MPS) Constraints: A Runway Scheduling Application 250
Tsakiri, M., Stewart, M., Forward, T., Sandison, D., and Walker, J. Urban Fleet Monitoring with GPS and GLONASS 382
van Breda, L. and Passenier, P. O. Effect of Path Prediction on Navigational Performance 216
Vogel, D. Experiences with the DGPS-based Tramway Location System in Mannheim . 336
Ward, N. The Status, Development and Future Role of Radiobeacon Differential GNSS 152
Weber, H. Fast Craft and the Colregs (Forum) 132
Williams, P. D. L. Civil Marine Radar – A Review and a Way Ahead 394
Williams, R. Middle Latitude Sailing Revisited (Forum) 135
Zhang Xinggu. A Study on the Application of Pulse Doppler Radar in VTS 237